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PLANTING
EDITION
OCTOBER-1937

FARMERS everywhere are saying that the amazing Firestone Ground Grip Tire is FIRST in performance and FIRST in economy. So many thousands of farmers are changing over to this wonderful tire that production has been greatly increased to meet the demand.

FIRST IN DRAWBAR PULL. The greater drawbar pull of this amazing tire accounts for its ability to do more work in a given time.

FIRST IN TRACTION. The patented Ground Grip Tread takes a deeper bite into the soil. Added strength to resist the strain of heavy pulling is provided by Gum-Dipping the cord body. Every fiber of every cotton cord is saturated with liquid rubber by this patented Firestone process. Two extra layers of Gum-Dipped cords under the tread bind the tread and cord body so solidly together that we guarantee they will not separate.

FIRST IN ECONOMY. Saves up to 50% in fuel over steel-lugged wheels. Covers more acres per day. Low-cost Firestone cut-down wheel program permits using one set of tires on several different implements.

FIRST IN SALES. Firestone Ground Grip Tires have such outstanding leadership in performance that sales are soaring. Don't wait another day — see the Firestone Ground Grip Tire today at your nearest Firestone Implement Dealer, Tire Dealer or Auto Supply and Service Store.

Listen to the Voice of Firestone featuring Margaret Speaks, Monday evenings over Nationwide N. B. C. Red Network

MORE FARM TRACTORS ARE EQUIPPED WITH FIRESTONE GROUND GRIP TIRES THAN ALL OTHER MAKES OF TIRES COMBINED!

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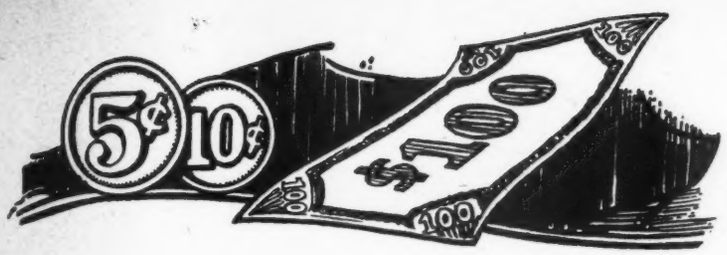
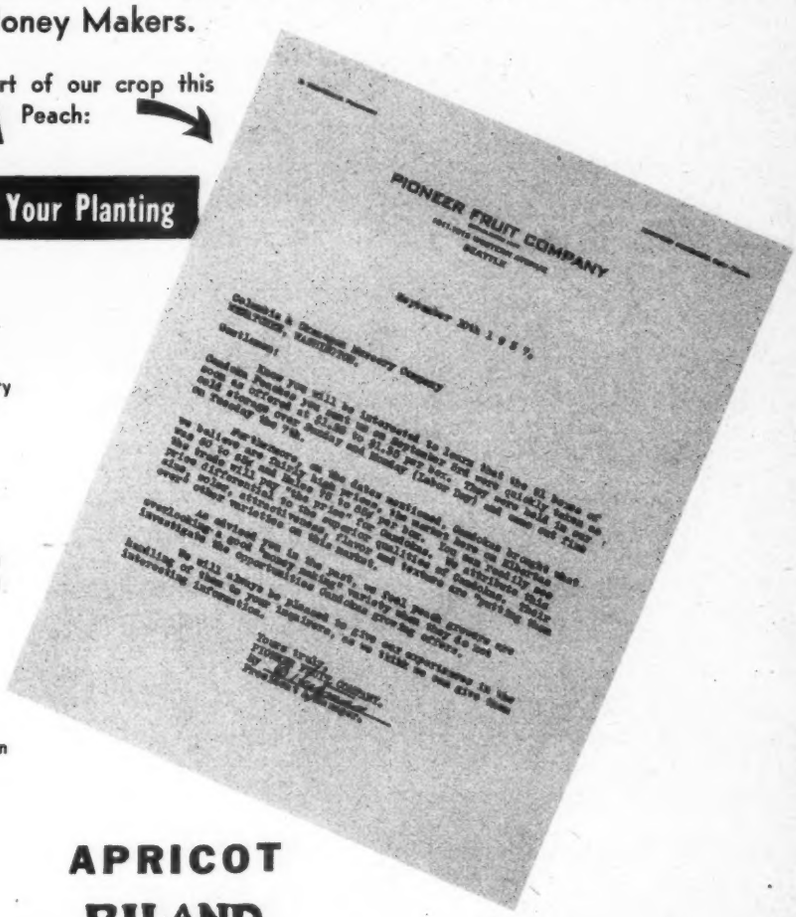


A Few Extra Cents INVESTED in BETTER Varieties will mean Dollars later on

Let Us Help You Select the Varieties Which Pay More Profit

Our U.S. Plant Patented and Trade Marked Varieties of Fruits have all proven to be real Money Makers.

Read what one commission house who handled part of our crop this season has to say about the CANDOKA (U.S. PLANT PAT'D) Peach:



PIONEER FRUIT COMPANY
SEATTLE

September 30th 1937

Columbia & Okanogan Nursery Company
WENATCHEE, WASHINGTON.

Gentlemen:

Know You will be interested to learn that the 81 boxes of Candoka Peaches you sent us on September 23rd were entirely handled at Chicago, arriving there on Tuesday the 28th.

We believe we are fairly high on these, but have no other to offer. Quality was fine, the color was attractive, and the fruit was in good condition on arrival. Chicago reports that the demand was good, and that prices ranged from $1.00 to $1.50 per box. Our price will be $1.00 per box, f.o.b. Wenatchee.

Regarding the dates mentioned, Candoka brought what we did not expect, but we believe we can do better with them next year. Chicago reports that the demand was good, and that prices ranged from $1.00 to $1.50 per box. Our price will be $1.00 per box, f.o.b. Wenatchee.

We will always be pleased to give our experience in the handling of your fruit, and to give you the benefit of any information we may have.

Yours truly,
PIONEER FRUIT COMPANY,
By ...
President.

Investigate These Varieties When Planning Your Planting

APPLES

SEEANDO WINESAP
A solid-red Winesap

SEEANDO RED ROME
A darker colored Rome Beauty
Practically all 100% Extra Fancy Grade

BLACKMACK
A beautiful early-coloring solid-red McIntosh

BLACKJON
The early-coloring Jonathan
Early Jonathans always bring a premium

RICHARED DELICIOUS Supreme
A solid cherry-red Delicious

BLAXTAYMAN
A solid-red Stayman Winesap
Practically no "C" grade

SHOTWELL DELICIOUS
Colors darker and earlier than Richared Delicious

PEACHES

REDELBERTA
A true Elberta which matures about a week earlier and has a great deal more red color than the common Elberta

RIO OSO GEM
U. S. Plant Pat. No. 89
Ripens about ten days later than J. H. Hale

APRICOT

RILAND
Earliest good commercial variety. Large and attractive, good shipper

Am.
10-37

C. & O.
Nursery Co.
Wenatchee,
Wash.

Send me your free catalogue describing your Better Varieties of Fruits. I am especially interested in

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MAIL THIS COUPON FOR YOUR FREE COPY of our large illustrated catalogue which describes our many New and Improved "BETTER" Varieties of Fruit.

We grow a General line of Nursery Stock Including Fruit, Shade, and Nut Trees, Roses, Vines, Evergreens, Etc. Landscape Service.

Columbia & Okanogan NURSERY COMPANY
"The Wenatchee Nurseries"
Wenatchee **Washington**

WE SHIP EVERYWHERE GUARANTEE SAFE ARRIVAL FREIGHT PREPAID

MORE TEETH FOR TRACTORS

STRAIGHT THINKING ON TRACTOR TIRES

● GOODYEAR builds a wide variety of tires for tractors and farm implements for the good and simple reason that *no one tread is best for all kinds of work and all types of soil.*

The new Sure-Grip, for example, gives maximum traction in mud, gumbo, wet clay and other "heavy" soils. In sand, loam and other loose soils, however, a more compact tread such as the Goodyear All-Traction performs more satisfactorily.

Tractor manufacturers, before the days of "rubber," had as many as 40 different steel lug combinations to fit different conditions. Obviously, one tire tread cannot replace them all.

Illustrated here are a few of Goodyear's Tractor and Implement Tires. Goodyear builds the most complete line of farm tires in the world.

NEW GOODYEAR SURE-GRIP TRACTOR TIRE DIGS DEEP TO GIVE RECORD DRAW-BAR PULL IN MUD, WET CLAY AND GUMBO

SPECIFY the sharp-lugged, deep-biting, tough new Goodyear Sure-Grip Tractor Tire for *your* tractor if you are farming land where mud, wet clay or gumbo predominates.

Then you can drive right through the worst going you ever encountered without losing traction, draw-bar pull or time.

Goodyear engineers designed the new Sure-Grip Tractor Tire as a running-mate for the famous All-Traction Tire—and as a much-needed member of the largest family of farm tires built by any manufacturer.

Supertwist Cord in every ply of the Sure-Grip's husky carcass gives it stamina to make hard work look like play.

Chemically-toughened rubber resists cuts and holds the sharp, biting edges of the high, wide-spaced lugs.

Lugs are pitched at a wide angle and shoulders are built extra high to give more traction in soil which is unusually soft and deep.

And there is no place in the tread for mud to lodge. Even in sticky gumbo or wet clay, this tire cleans itself with each turn of the wheel.

Tractors on many farms will do much more work at lower cost and in less time when they are equipped with Goodyear Sure-Grips.

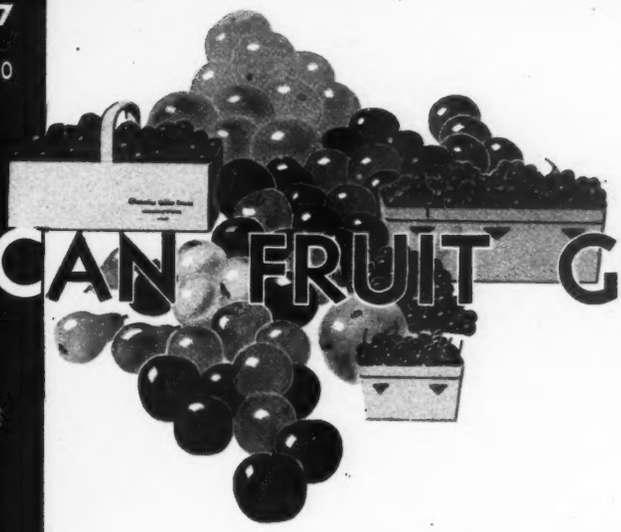
Perhaps your tractor is one of them. Talk with your Goodyear dealer and ask his advice.

MORE FARM TRACTORS ARE EQUIPPED WITH GOODYEAR TIRES THAN ANY OTHER KIND

GOODYEAR

OCTOBER 1937

VOL. 57 NO. 10



AMERICAN FRUIT GROWER

The
NATIONAL FRUIT MAGAZINE

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THE FRUIT INDUSTRY MARCHES ON

AN autumn planting guide for the orchard in itself suggests planning, forethought, study. Anyone who is familiar with, or has lived through, the successes and vicissitudes of the orchardist in recent years can well understand why careful planning of new plantings is advisable. He is a gambler indeed who embarks on a new orchard venture without giving careful consideration to the possible outcome.

There is much sentiment, perhaps too much, about planting a tree. The industry can well hold the esthetic side of the picture to the public, can repeat that "horticulture is the refinement of agriculture," and yet back of this window dressing is the stern fact that orcharding is a business. Trees and varieties that are profitable are to be encouraged and indulged, but those which are not should be taken out and replaced by others.

Recently we have talked with three different individuals in as many different states, all of them well over 80 years old, who expressed the same thought out of a ripe experience. It was this: If one would keep himself and his enterprise young, he should have new orchards coming on all the time. Take out the old ones and plant new varieties or at least new trees. One simply has to keep alive to see how the new ones will come out. It was a stirring, challenging thought and we pass it on, again and again, to those who think they are getting old at 50 or 60. The chemist has a word "nascent" which fits the case; look it up.

Now this idea is growing rapidly, trees which are getting too large to handle economically are being taken out, and new blocks set in their stead. There has never been a time when so many new varieties of merit have appeared in a relatively short time as during the past 10 years. The up-to-date grower will want some of them in his planting.

On no point in our knowledge has there been a greater clarity than in the selection of a good orchard soil. It has been shown by careful surveys that soil alone may cause a 50 to 100 per cent difference in yield. A deep, well aerated soil is the crux of the matter, and longer lived, more regular and more productive trees are secured when this important precaution is taken. Would it be putting it too strongly to say that a favorable site and soil contribute more to the success of the orchard enterprise than any other factors? For too long we looked only at the surface eight inches, but now it is realized that it is the character of the first two or three feet that makes the difference.

What of the outlook in general? The U.S.D.A. prediction is that "the general trend in production is expected to be downward at a slow rate, unless tree replacements and new plantings are increased somewhat over those of the last few years. Even with some increase in average production the average price to growers for the next five years will probably be somewhat higher than the average of the last five seasons because of increased consumer buying power." It may be said that the estimate is that the number of trees in apple orchards at present is probably not more than 95,000,000 as compared with 116,300,000 in 1930 and 217,100,000 in 1910. The industry is better with fewer trees than we once had, but some replaceemnt of these heavy losses is justified.

The pessimist is always with us; there are always those who are ready to surrender to adverse situations, and such situations usually are not difficult to find. But let us repeat what has been said in these columns before. The fruit industry of America is a permanent one; it is diversified; it warrants the greatest confidence. There are new forces at work which augur well for all who have built their orchard enterprises on a sound basis. New knowledge of the value of fruits in the diet, unified efforts of advertising and salesmanship as exemplified through the apple institutes, orderly marketing, cheaper cold storage facilities, higher production on fewer acres, improved buying power, and a possibility of better trade relations, all contribute to a brighter picture.

Hence, with the new plantings which will be put in this fall and next spring, we move toward a sounder fruit industry in the United States. The Golden Age lies ahead, not behind us.

McCormick-Deering Orchard Tractors

Pave the Way to Bigger Yields

Paving the way to bigger fruit yields! That's what McCormick-Deering Orchard Tractors are doing season after season for progressive growers who invest in power equipment bearing the McCormick-Deering name.

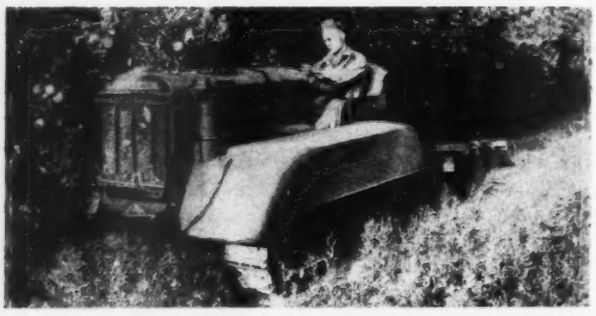
Recommended for work in orchards and groves are four McCormick-Deering Tractors: The Model 0-12, shown at the right, the Model 10-20 and Model W-30 with new orchard features, and the Model T-20 Trac-TracTor, a powerful accessible crawler. All are easy to maneuver around trees and under low-hanging branches. All are compact, economical on fuel, and adapted to work with many different orchard implements.

Ask the nearby McCormick-Deering dealer to tell you more about these tractors.

INTERNATIONAL HARVESTER COMPANY
(Incorporated)
Harvester Building **Chicago, Illinois**

Above: Down between rows of fruit trees comes the McCormick-Deering 0-12 Tractor. This tractor, owned by the Southwest Cotton Company, Litchfield Park, Arizona, is cultivating a citrus grove.

T-20 TracTracTor Economical for Custom Work



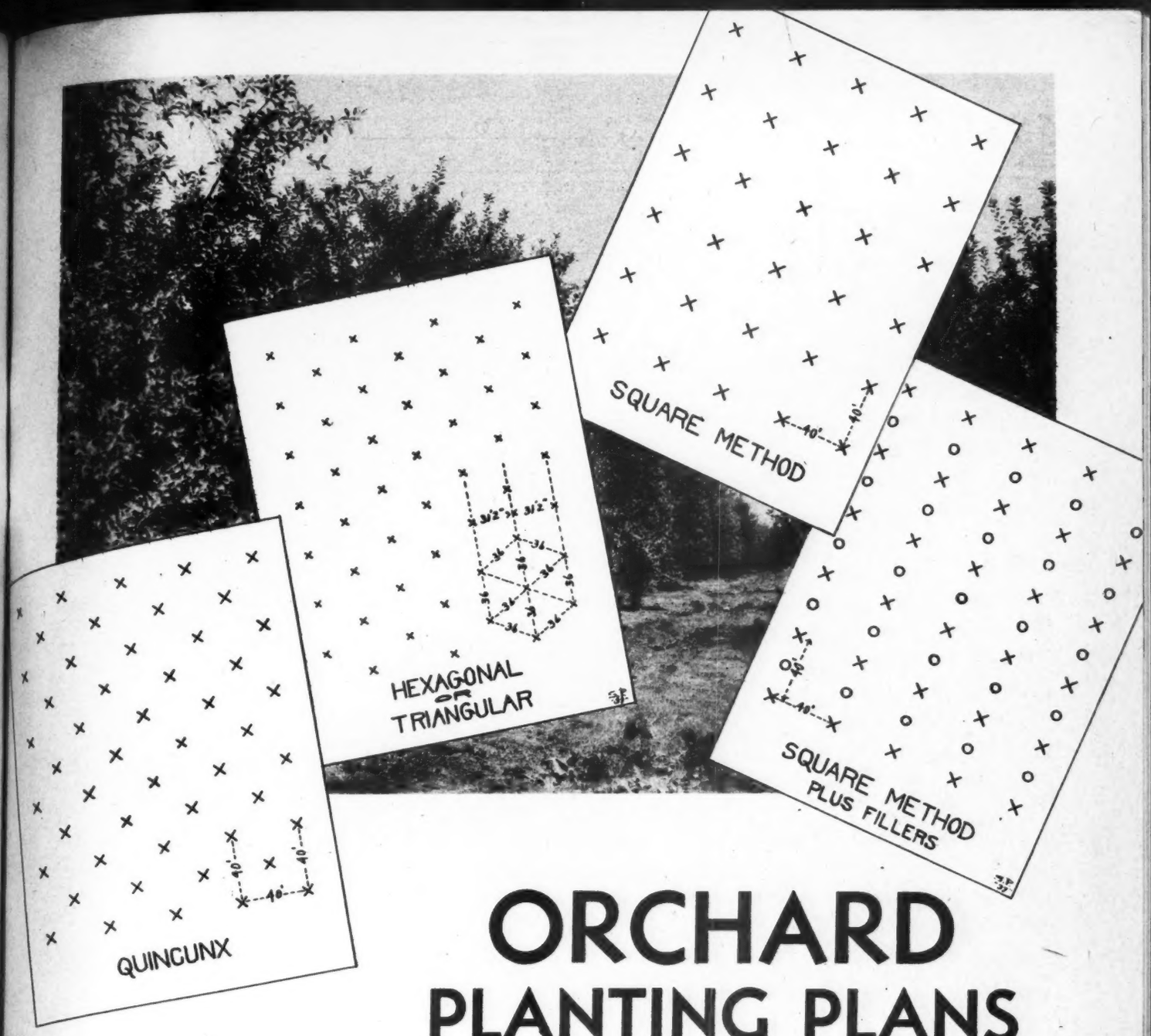
"A year ago I bought my third TracTracTor for custom work. I bought my first T-20 in 1932 and liked it so well that I have continued to buy T-20's ever since."

"This last tractor is taking care of more than 20 customers with some 300 acres of groves as well as my own 20 acres. Considering the heavy work I do, the T-20 is very economical in operation."

(Signed) Z. P. Anderson,
147 Orange Ave., Highland, Calif.

Mr. Anderson's T-20 is shown at the left.

McCORMICK-DEERING



ORCHARD PLANTING PLANS

By C. W. ELLENWOOD
Ohio Agricultural Experiment Station

NEXT to the choice of varieties for a new orchard planting, distance and arrangement of the trees will provoke more argument than most any subject which can be presented to a star chamber session of fruit growers. If you doubt this, just casually introduce the subject before or after the program of your next monthly or annual fruit growers' meeting.

There will be the 20x20 foot, the 35x35 foot, the 40x40 foot, the square system, the quincunx, the hexagonal, the filler, semi-filler, and the permanent devotees all putting up good claims for one or more of these distances and planting plans.

After you have listened to a session or two of this sort you come to the conclusion that a lot of these fellows are merely trying to put a stamp of approval on their own decision regardless of the merit of the particular plan.

It is recognized that no one plan can be adapted to all conditions. For instance, trees cannot be set as close on naturally fertile deep soil as they may be on the more shallow soils. There is a vast difference in size of tree between varieties. Contour planting is especially suited for hill sections. There are many other conditions which call for special arrangement of trees.

Most orchard sites, however, lend themselves to one or more of the standard layouts, and we shall confine this discussion to a consideration of the three planting arrangements commonly followed: (1) The square system, wherein the site is layed off in squares with a tree at each corner of the square. (2) The quincunx system, which is essentially the square system with a tree in the center of the tree square, although the four trees may embrace a rectangle rather than a square. (3) The hexagonal system, where the trees are planted equally distant from each other in all directions.

The first and second plans lend themselves to the use of filler trees, while the third system is not so easily adjusted to the use of fillers.

In considering the merit of these three systems, we find that there are plenty of recommendations pro and con for each of them in textbooks and bulletins, but unfortunately these recommendations have not been supported by data gathered from orchard production records. Primarily, of course, a grower is interested in producing the largest number of bushels of fruit per acre over the longest period of years at the lowest possible cost per bushel. To do this he aims to utilize to the best advantage the entire soil area by obtaining an equal distribution of the root system and at the same time taking into

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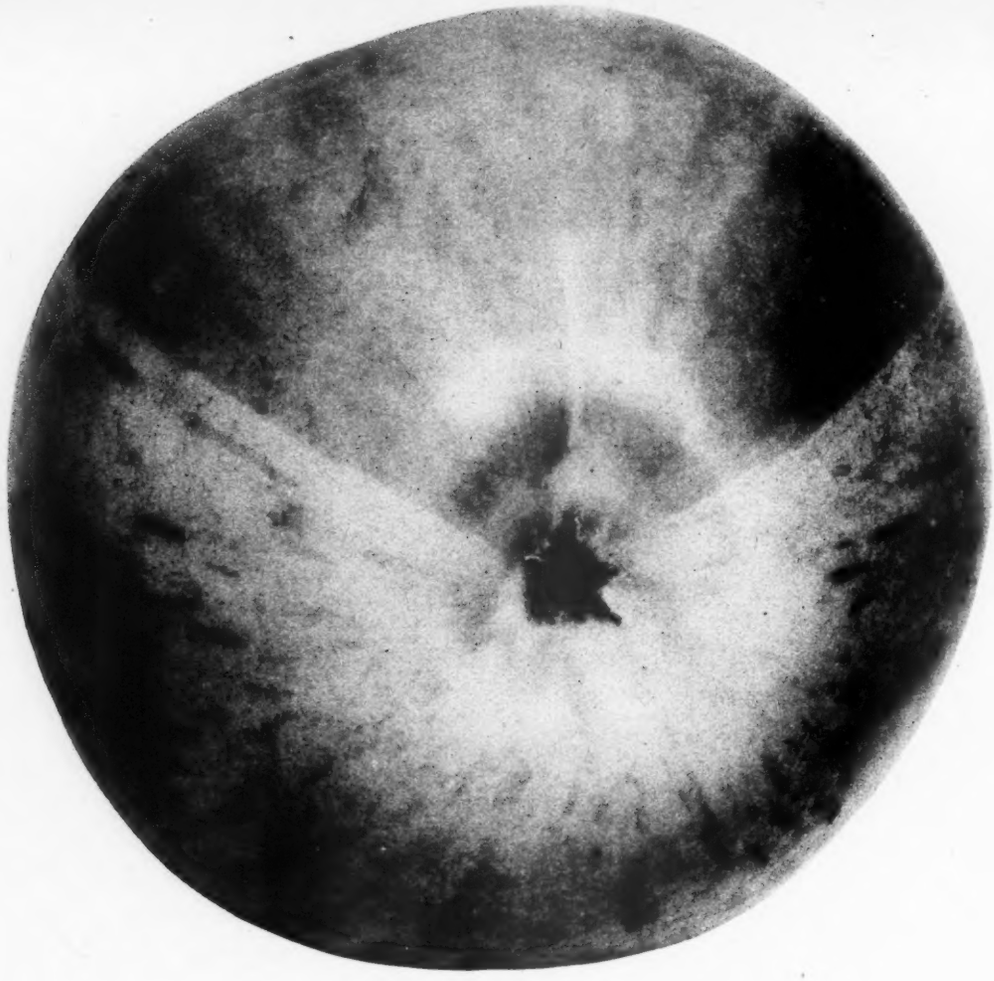


CHIMERAS AND BUD SELECTION

By ROY E. GIBSON

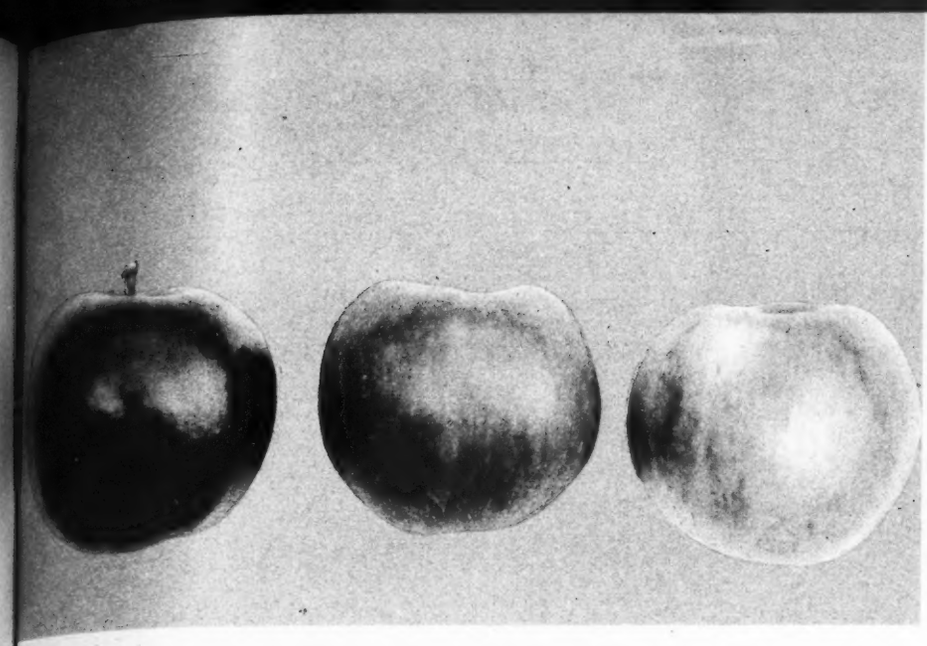
Interest of fruit growers has been aroused during the past few years in chimeras (pronounced kī-me'raz) and bud selection for fruit improvement. The author of this article has spent years in research work on chimeras and is best suited to present the subject to AMERICAN FRUIT GROWER readers. To complete the general picture of fruit betterment through selection and careful observation, we present a digest of the present bud sport situation on page 11 of this issue.—EDITOR

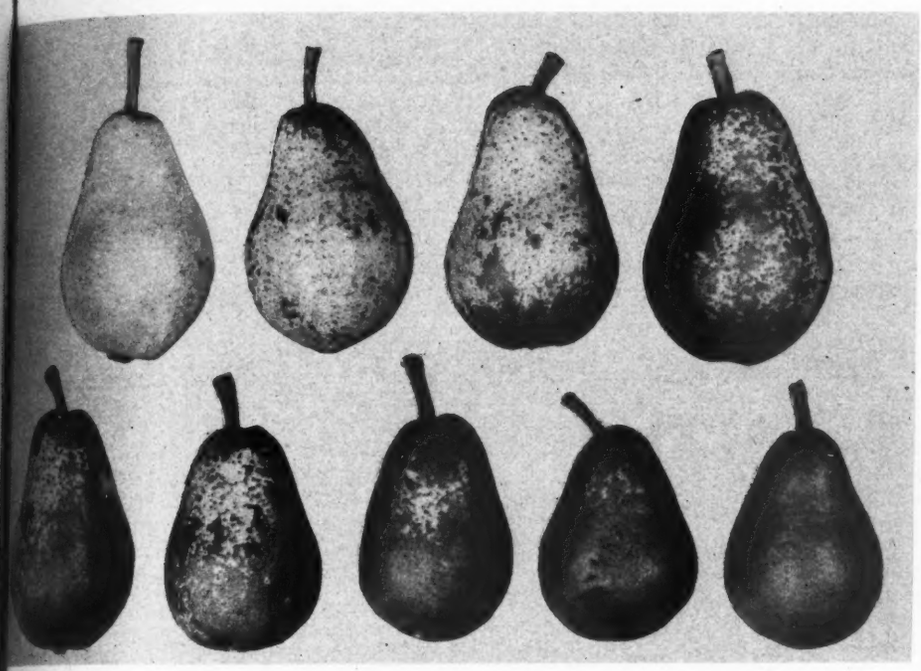
COMMON methods of vegetative or asexual reproduction are based upon the belief that all buds on an original tree are of identical genetic constitution. This being true, "like would produce like," and varieties would reproduce their original characteristics indefinitely. However, our evidence indicates that many original trees from which commercial varieties have sprung were in reality of mixed genetic constitution or chimeras. Propagation from these has resulted in orchards having mixed varietal characteristics, and limb and tree variations are the result of natural division or segregation of factors inherited from original trees.

Occasionally a limb or tree is found where the division is complete. This we think of as a true sport. The progeny is stable. It reproduces true. Most variations are found as mixtures in which the division has not yet been completed. They are still in the transitional or changing stage. Skill in selection comes from knowing transitional trees and choosing propagating buds from limbs that possess the more desirable characteristics. Variation occurs in all characters, including production. This article will be confined to a consideration of color and size.

We recognized the fact that trees of the same variety were not always alike and that individual trees varied widely in their characteristics before starting individual tree performance records in 1917. The results were baffling inasmuch as certain trees were not consistent but grew both striped and solid red apples and apparently changed from year to year. Our first limb variation found in 1919 produced ill-shaped apples that seemed to be freaks.

In the autumn of 1924 while making color observations in the orchard of Ballard Brothers at Niles, Mich.,





Opposite page—A Chenango sectorial chimera showing about a third of the fruit a solid red and the remainder striped. Above, top—Three McIntosh color chimeras; left to right, red, red striped, and striped. Above—Mottled Bartlett-Russet chimeras. Right—Chimera transition; regular McIntosh at top, McIntosh size chimeras in center, and Giant McIntosh below.

a McIntosh sectorial chimera was found that was divided similarly to the Chenango shown on opposite page. One sector comprising three-fifths of the apple was solid red in color and the other was distinctly striped. This gave us the clue. The tree was mixed. It produced both solid red and striped fruits. Two colors were growing together on one tree. Two kinds of living tissues were united in one plant.

During the next two days 108 McIntosh trees growing in the orchard of T. S. Smith at Fennville, Mich., were carefully examined. Sixty-one produced only striped apples. Sectorial chimera apples were found on each of the other 47 trees. Solid red fruits greatly predominated but striped specimens were found on every tree. Striped color limb sports were located and marked on 21 of the transitional trees. These observations were checked each succeeding year until 1933. Progeny tests were made by top-working at the Graham Experiment Station at Grand Rapids, Mich.

This orchard is typical of McIntosh apple orchards in every section of the United States and Canada which are made up of trees striped and transitional in various proportions, with an occasional tree or limb sporting to the red type. A similar condition is to be found in other standard varieties, including Astrachan, Chenango, Cortland, Delicious, Duchess of Oldenburg, Hyslop Crab, King, Northern Spy, Shiawassee, Steele Red, Wealthy, Winesap, and Wolf River. Some varieties—McIntosh, Snow, Northern Spy, Delicious, and Duchess of Oldenburg—have several different striped color types and more than one red type. The oldest orchards vary the same as the younger ones in color.

Mottled color chimeras are to be found as russet mixtures in Baldwin, Rhode Island Greening, Grimes Golden, and Golden Russet apples, and in Bartlett pears. The fruit markings resemble spray injury and the fruit has no commercial value. When a whole tree or large limbs of the russet variation occur in an orchard, the same variation appears as specimen apples scattered among the normal ones in other trees of the same propagation. Russet colored sports appear as segregations from transitional limbs bearing mottled chimeras. The Bartlett pears in the accompanying illustration were taken from such a limb, one spur of which has sported to the russet color.

Nature teaches her first lesson in bud selection in colors. From color we progress gradually to understand that trees vary in other characteristics in the same way and for the same reason. A variation limb coming from a Rhode Island Greening tree on the farm of Frank Fergunson, Bangor, Mich., producing what were known in the community as sweet and sour Greenings, helped us to classify the imperfectly shaped fruits, that were formerly considered freaks, as size sectorial chimeras. In these interesting apples one sector, the raised portion, was green and sour, while the sunken area in each apple was yellow and sweet. It was a chimera, a mixture of Rhode Island Greening, a large green sour apple, with a smaller yellow sweet apple.

Sectorial chimeras combining large and small sizes are found in many of

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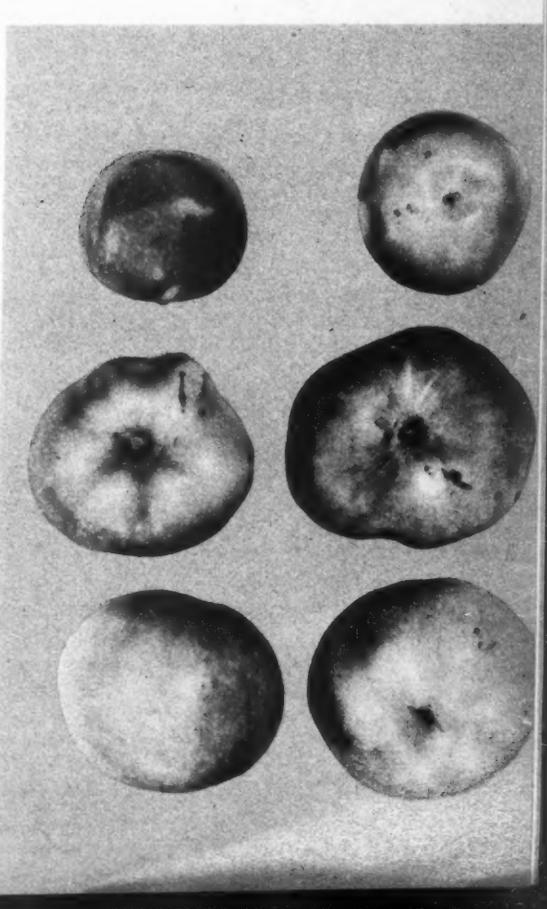


BERRIES •

NEW OR OUTSTANDING VARIETIES

By George M. Darrow
Senior Pomologist, U.S.D.A.

Dewberries

Cameron—A large, fine-flavored, very dark to black-fruited thornless dewberry resistant to leaf spot. Has a tough cane that does not break easily in handling. Not very vigorous until the second year. A North Carolina station cross between Young and Lucretia worthy of trial.

Boysen dewberry or Boysenberry—Very large (largest berries one by one and one-half inches), fine-flavored, attractive dark wine red to nearly black in northern regions. Ripens 10 days after Young (Youngberry) and therefore of value for lengthening the season of the Young. Probably of less value than the Young in eastern United States from Virginia to Oklahoma and southward because of its later season, but of more value on the Pacific Coast because of its larger size and tarter flavor.

Red Raspberries

Dixie—A small to medium-sized bright red berry for the southern limit of raspberry growing. A North Carolina station introduction of great vigor and the first hybrid between *Rubus biflorus*, an Asiatic raspberry, and Latham ever introduced.

Newburgh—Very large and firm, bright red, plants hardy in the North. Usually escapes mosaic infection. A New York station introduction. The best variety in those northeastern states where it can be grown, because of its size, productiveness, firmness, and beauty. Too subject to leaf spot and anthracnose from central New Jersey to Illinois and southward except at high elevations. Very fine in Oregon and Washington but not high-flavored there.

Viking—Large, medium red, one picking before Cuthbert. Susceptible to mosaic. An Ontario station introduction. This is a more productive, hardier variety of the Cuthbert type—tall-caned and with a Cuthbert flavor. The berries have a large cavity. It succeeds in about the same area that Newburgh does and is likewise far too subject to leaf spot and anthracnose to grow in central New Jersey and in regions as far south.

Taylor—Very large, firm, conical, medium red, plants very productive, hardy. A New York station introduction. This may be resistant enough to leaf spot and anthracnose to be grown as far south as Maryland. Promising for trial from New England to Iowa.

Marcy—Largest of all named varieties, long conic, dark red, glossy, firm, good, productive. A New York station introduction. Escapes mosaic. Probably too subject to leaf spot and anthracnose for central New Jersey and southward.

Black Raspberries

Naples—Late, large, glossy, good quality. A New York station introduction. The most promising of the new varieties to follow the old standard, Cumberland, in season.

Bristol—Very large, attractive, firm, very good, early. Promising for trial as an early.

Purple Raspberries

Potomac—Late, attractive purple, tart, very firm, best variety for jam, preserves, and canning, very productive, as hardy as Latham in the North and so resistant to leaf spot and anthracnose that it can be grown as far south as any raspberry. A U.S.D.A. introduction.

Sodus—Larger and better to eat out-of-hand than Potomac. Very vigorous and attractive purple color. A New York station introduction. Its hardiness is not fully known nor is its southern limit of culture, but where adapted it is probably the best purple for the general market.

North Dakota 117—A medium-sized, very hardy purple worthy of trial in the upper Mississippi Valley region where hardiness is of chief importance. A North Dakota station introduction.

Blackberries

Eldorado (called Stewart and Texas in Oregon and Washington)—Long the standard of quality in blackberries and best for general use still.

Currants

Red Lake—A new variety of large size, with long clusters, productive and of good quality. A Minnesota station introduction. Should be tested everywhere in comparison with the standard varieties. Bush more erect and vigorous than Perfection.

Gooseberries

Fredonia—A large dark red variety of the English type and probably the best of the type in this country. A New York station introduction.

Poorman—Large, scarlet, not so large as Fredonia but the finest in color and flavor of the gooseberries.

Glenndale—Medium-sized, dull red, fair in quality. The largest bush and most disease-resistant of all varieties, hence succeeds best as far south as Virginia and Tennessee. A U.S.D.A. introduction. Not recommended where Fredonia and Poorman succeed.

Elderberries

Adams—Fruit clusters and berries exceptionally large. The only named variety now grown.

Strawberries

Dorsett—Large, glossy, bright red, firm, very high in dessert quality, early, plants very vigorous. Productive in Maryland and Virginia and similar latitudes: usually not very productive in latitude of northern New England, northern New York, and Michigan. One of the finest-flavored of all. A U.S.D.A. introduction.

Fairfax—Large, glossy, deep red, very firm, very high in dessert quality, plants productive, medium early. In eastern North Carolina makes few plants, but northward produces plants freely. Succeeds best from southern New York to Virginia and west to Missouri. Sweetest high-flavored strawberry. A U.S.D.A. introduction.

Catskill—Very large, bright red, rather irregular, not very firm, good in dessert quality, midseason, plants very vigorous. Very productive from central New England south to Virginia and west to Missouri. A New York station introduction.

Rockhill (Wayzata)—Large, bright red, irregular, very high in dessert quality. The best everbearer where it makes enough plants. One of the best in quality of all strawberries. Gem, Green Mountain, and Mastodon produce plants more freely than Rockhill, but Gem is smaller and tart and Green Mountain and Mastodon are not so good flavored.

Redheart—Large, irregular, dark red, high in dessert quality, and the firmest of all strawberries. Too subject to leaf scorch for most parts of eastern United States, but preferred for canning and freezing (sliced) in the Northwest. A U.S.D.A. introduction.

American Cranberrybush

Andrews, Hahs, and Wentworth—These three varieties have been selected for their value for jelly and for the beauty of the flowers, foliage, and fruit. Recommended for trial in northern states. Selections of U.S.D.A.

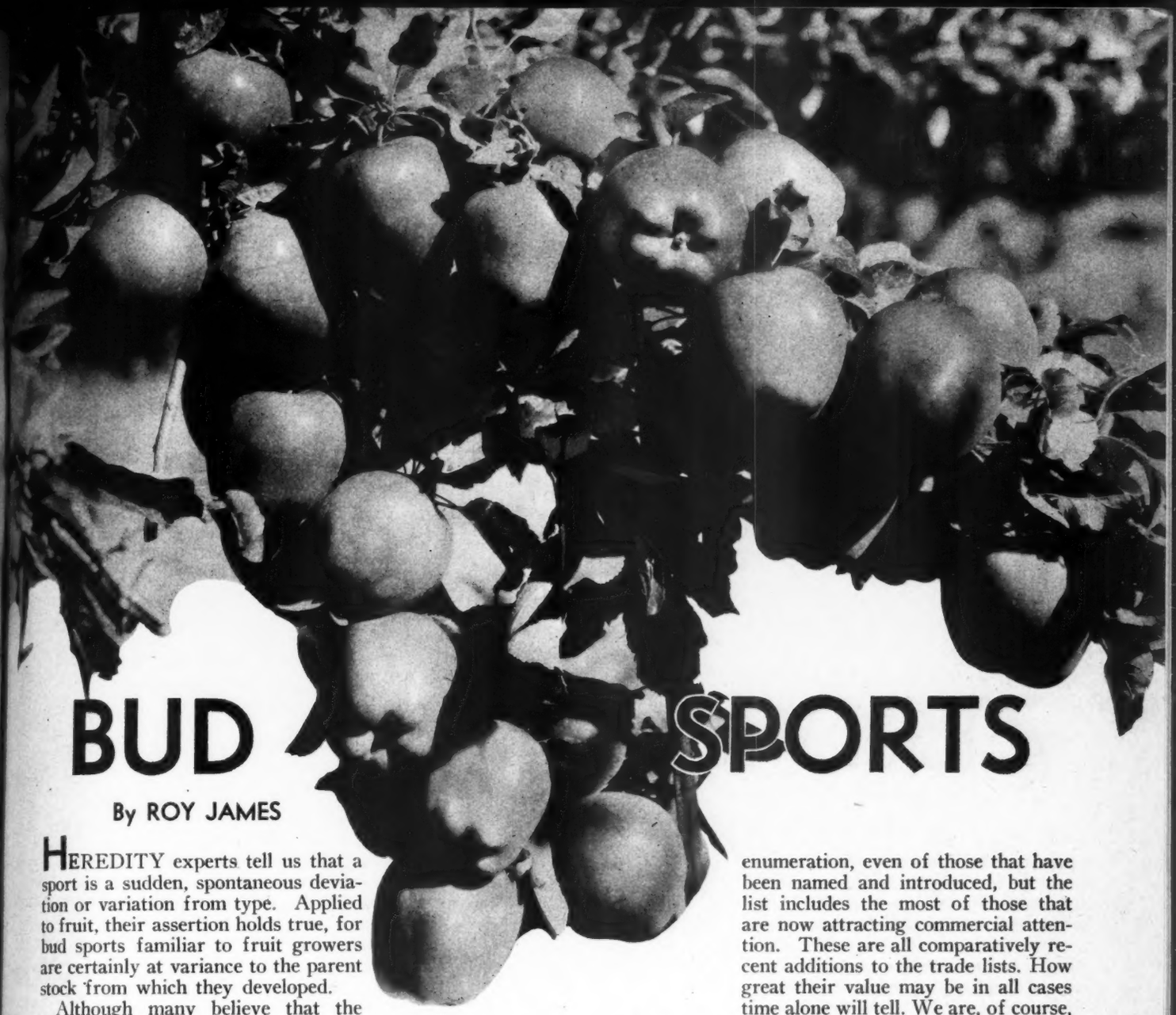
PEACHES •

NEW VARIETIES

By F. P. Cullinan
Senior Pomologist, U.S.D.A.

In recent years there has been considerable interest in the various fruit growing regions of the country in new varieties of peach ripening earlier than Elberta. There has also been considerable interest in varieties that might prove of sufficient commercial importance to plant in place of Elberta. Thus far no important variety has been introduced either as a result of breeding studies or from chance selections which appears superior to Elberta for its season. This variety still retains the place it has occupied

(Continued on page 19)



BUD SPORTS

By ROY JAMES

HEREDITY experts tell us that a sport is a sudden, spontaneous deviation or variation from type. Applied to fruit, their assertion holds true, for bud sports familiar to fruit growers are certainly at variance to the parent stock from which they developed.

Although many believe that the bud sport is limited to a change in the bud alone or the resulting growth from a bud, such sports may occur as limb, entire tree, leaf, or individual fruit variants. While chimeras represent variants in an incomplete stage of change, the true sport is a new type that has completed the transition.

Sports are often thought of entirely as to their color characteristics, since the commercial grower is often most interested in securing color improvements. But it is also true that bud sports may show variance in size of fruit, tree hardiness, blooming period, bearing habits, and other characteristics.

U.S.D.A. pomologist H. P. Gould says, regarding bud sports, "It's queer how in the past few years so many people have become 'bud sport conscious!' But that is well. Some pretty promising things in bud sports have attracted attention. No doubt such bud sports have existed since folks began to grow fruit, but nobody saw them; or, if they did, they meant nothing to the observer.

"Just to enumerate some of the bud sports in apples, we have the following:

Presented in this article is a summary of known facts pertaining to the bud sport situation as it now exists. Through chimeras and bud selection (as described on pages eight and nine of this issue) scientific breeding and the expert propagation of outstanding bud sports, fruit improvements have developed and will continue to develop.—EDITOR.

"From the Delicious—Starking, Richared, Shotwell Delicious, Harrison, Red Delicious.

"Rome Beauty—Red Rome (perhaps several strains under this designation), Seeando Red Rome.

"Stayman Winesap — Staymared, Scarlet Staymared, Blaxtayman.

"Winesap—Seeando Winesap.

"McIntosh—Blackmack.

"Jonathan—Blackjon, Jonared.

"York Imperial—Yorking, Colora.

"Northern Spy—Red Spy.

"Oldenburg—Red Duchess.

"Gravenstein—Banks, Red Gravenstein.

"This is not intended as a complete enumeration, even of those that have been named and introduced, but the list includes the most of those that are now attracting commercial attention. These are all comparatively recent additions to the trade lists. How great their value may be in all cases time alone will tell. We are, of course, inclined to think of them as substantially identical with the parent varieties except as to color, which among the apples is usually in the direction of more and earlier coloring. That the color factor is the only difference in all cases, remains yet to be determined to a greater or less extent."

Thus, a veteran pomologist presents his opinion on this matter of bud sports. Some of the older bud sports have received definite approval from the fruit industry since they have performed creditably under even adverse growing conditions.

"Bud sports," says Dr. M. J. Dorsey, chief in pomology, Illinois Agricultural Experiment Station, in his booklet, "The Bud Sport Situation," "are not new. We have a record of a bud sport as early as 1741, but it is now a matter of history that Starking was the first color sport of any important commercial variety to be 'put on the map' in a national way. With the interest in bud sports thus aroused it was easy for others to follow the lead."

First of the sports, as stated by Dr. Dorsey, was the Starking. It was

(Continued on page 19)

Recipient of the prized Wilder Medal awarded to outstanding fruits by the American Pomological Society, the Starking apple, shown above, was originally found as a limb sport in a New Jersey orchard.

APS

A PAGE CONDUCTED IN THE INTERESTS OF THE AMERICAN POMOLOGICAL SOCIETY

MAKE PLANTING PLANS CAREFULLY

DURING the past few years a great deal of attention has been given to the general subject of the national shrinkage in the number of our deciduous fruit trees. In some quarters this decline in numbers is regarded as a decidedly favorable factor from the standpoint of the producer. In other quarters the situation is regarded as dangerous to the stability of the deciduous fruit industry of the United States. For some years to come individual growers will likely profit because of "scarcity," and if the "scarcity" becomes too acute and prices are driven too high, other fruits may capture the deciduous fruit markets, to the general detriment of those who are in the business of growing and selling such deciduous fruits as apples, pears, cherries, peaches, etc.

Growers and fruit growing regions are now facing this situation. Reasonably good prices have stimulated new interest in expanding acreages. It is an important issue, and decisions made now will be a decisive factor in determining whether the deciduous fruit industry will remain on a sound basis. We have had several periods of overplanting in the United States, to be followed by overproduction and low prices. Since 1930 our export trade has dwindled seriously and may never be regained, which means that our domestic market must continue to absorb great quantities of fruit formerly grown for the export trade.

This situation calls for careful analysis by fruit growers and by regions to determine to what extent fruit plantings should be expanded; what kinds and varieties to plant in order to satisfactorily meet the market demands of tomorrow to the benefit of producers, marketing agencies, and the consumer.

The year 1936 saw considerable planting through the Middle West and East, and present indications are that in 1937 the demand for nursery stock will be in excess of the available supply.

Orchardists Stock Conscious

During recent years growers of deciduous fruits in practically all important fruit growing regions of the United States have taken great losses because of winter injury. There is widespread interest in the question of hardier varieties and in hardy stocks. Considerable evidence has accumulated showing that hardy understocks such as Hibernal, Virginia Crab, Hass, and others build longer lived and more productive trees in the case of such varieties as Jonathan, Grimes, and Delicious. That a considerable acreage of new orchards will be developed on hardy stocks is indicated by the widespread interest among growers in the stocks problem.

Varieties

The variety question is always an absorbing one. Few varieties thrive equally well in all locations. What to plant is a regional, state, and locality problem. Success in fruit growing is largely dependent upon planting productive varieties which are in demand either locally or upon the general markets. New varieties are numerous and some of them are bidding successfully for a place on the planter's list.

The red bud sports of Delicious, Jonathan, Rome, Stayman, McIntosh, Northern Spy, etc., are claiming a great deal of attention. These are brand new creations. Whether a grower is making a safe investment in large plantings of relatively untried bud sports remains to be seen. There seems little doubt but that some of the red bud sports are destined to become leading commercial varieties. At the summer meeting of the Washington State Horticultural Association in July, C. L. Robinson of Yakima told the American Pomological Society tour group that: "During the past five years there has been relatively little planting of fruit trees of any variety and this is particularly true of apples. Such apples as have been planted are usually the red sports, especially Red Delicious.

Mr. Robinson added also that: "Principal apple varieties include Winesap, Delicious, Jonathan, Rome Beauty, and Yellow Newtown in the order named. Pears include, first, Bartlett, then D'Anjou, Winter Nelis, and Bosc. Peaches, Elberta first, and lesser quantities of J. H. Hale, Rochester, Gold Medal, and others. Cherry varieties are Bing, Lambert, and Royal Ann; apricots, Wenatchee Moorpark, Tilton and Blenheim; prunes, Italian for fresh shipment; grapes, Concord and similar sorts, but also some European types for wine."

Mr. Robinson stated that the "average production for the Yakima Valley has been about 12,500 cars of apples, 3500 of pears, 1000 of peaches, and 400 cars of sweet cherries." It was Mr. Robinson's opinion that there may be a slight increase in apple production in the valley. Pears are approaching maximum production, while peaches will probably remain at the present level. Sweet cherries will likely show a greater increase than the other fruits as a larger proportion of the trees is not yet in full bearing.

Some New Apples

New varieties are winning their way a little at a time. The Cortland originated by the New York Agricultural Experiment Station some 30 years ago is attaining the position of a commercial apple in New York and in some of the New England states. Melba and Early McIntosh are making a strong bid for a place among early apples in the East. In the Middle West the Minnesota Experiment Station's Beacon, a fine red apple of Duchess season, looks very promising, and the Haralson, a winter apple, is being planted widely because it is so dependably hardy and productive.

In Iowa the Joan, a large, beautifully colored red apple is creating something of a sensation due to the unusual production of the tree and because of the beauty of the fruit. Secor and Edgewood are both crosses of Salome x Jonathan and are well adapted for growing in Jonathan regions. Both varieties are later keepers than Jonathan and free of Jonathan spot. Other promising new apples for the Middle West are Sharon and Hawkeye Greening. In Missouri, growers are planting several new sorts which were introduced a few years ago by the Missouri Experiment Station.

Sungold, a New Peach

We recently received a half dozen specimens of the new Sungold peach from an orchardist in southeast Iowa. Sungold is as handsome as well grown J. H. Hale, which it resembles in form. The quality is superb. Experts have rated it as good or even superior to J. H. Hale in flesh and quality. The skin is just right for handling purposes, and is attractively covered with a bright carmine. The flesh is yellow, firm, yet tender, juicy, and richly flavored. We have seen specimens from the original tree as large as 11 to 12 inches in circumference.

In 1920, Melvin Kerstein, a school-boy in Des Moines, planted a few peach seeds. One of the resulting trees grew rapidly and bore fruit at about five years of age and has been regularly productive since that time. Trees propagated from the original tree have shown desirable vigor, strong foliage, and productivity. Sungold looks like a winner.

Memberships

We still have some Reports of the Virginia Convention. This Report contains 290 pages of horticulture and is sent to members upon receipt of their annual membership fee of $1.25. Also a year's subscription to AMERICAN FRUIT GROWER. Send membership dues to H. L. Lantz, Secretary, Ames, Iowa.

H. L. Lantz
SECRETARY

Annual Convention, Springfield, Missouri, Dec. 8-9-10

Program and announcements relative to the Annual Convention of American Pomological Society are being prepared and will appear in the November issue of AMERICAN FRUIT GROWER. This convention is to be held in joint session with the Missouri State Horticultural Society. The state horticultural societies and fruit growers from neighboring states are planning to participate and to make this convention a regional meeting.

The fruit show will be one of the most complete and comprehensive exhibits in many years. Fruit growers, experiment stations, and amateur horticulturists are urged to send or bring new varieties which they are growing. A special effort is being made to bring together a large showing of new varieties.

Competitive fruit displays will show popular varieties from many growers and from many states, particularly Middle West and southern states. For further details write W. R. Martin, secretary, Missouri State Horticultural Society, Columbia, Mo.

THE BOYSENBERRY PERFORMS

By JONAS HOWARD

Boysenberries, natural size, on H. W. Schmitkons Fruit Farm, Lorain, Ohio. Photo made July 19, 1937. Note heavy fruit production and abundant foliage.

SINCE its introduction a few years ago, the Boysenberry has probably created more interest among berry enthusiasts than any other one small-fruit innovation. Attention has been centered on this new fruit because of its unusual size, delicate flavor, and attractive color.

One of the first questions asked about the Boysenberry concerned its hardiness. From photographs and canned and fresh fruit samples, interested growers in the North learned that the Boysenberry was an excellent fruit when grown in the Southwest. There remained but one action for these growers to take. This they did by setting out Boysenberry plants in almost every section of the country north of latitude 35.

To determine the performance of Boysenberries under northern conditions, AMERICAN FRUIT GROWER recently conducted a survey of growers whose Boysenberries had gone through a winter season.

Probably the most interesting grower-experience is that of H. W Schmitkons near Lorain, Ohio whose Boysenberries were covered with a snowdrift during the severe 1935-36 winter and came through to produce fruit the summer of 1936. Last year Mr. Schmitkons covered the plants and they produced a fine crop the past season.

A Kentucky grower, G. W. Knorr, Finchville, says that his plants withstood the low temperatures of the 1935-36 winter only to be robbed of good production by drought during the following summer.

Sam Story, Story's Berry Farm, Stillwater, Okla., reports that the Boysenberry makes a thrifty growth and produces a heavy yield of well-flavored berries. Mr. Story has 19½ acres of Boysenberries.

Pioneering with small fruits has been the experience of Idaho Falls, Idaho, fruit grower Marimer Bain. From this farm comes word that, "About 10 years ago this locality was considered unfit for small fruit due to severe winters, but every year the people are discovering more fruits that do well in this section. When we moved here 13 years ago there was a dewberry plant on the farm and with care it did not winterkill. So I decided to try out other berries.

"The Boysenberry was recommended by a friend living in Los Angeles. I sent for some plants, but had no idea a native California plant would stand our winters. Not one of the plants died and they grew thrifty. Last fall I covered the plants with vines of perennial sweet peas about six inches deep and removed the vines this spring shortly after the plants started to leaf. The plants have made wonderful growth this year. I am leaving the runners on the ground and will cover them this fall. I plan to trellis the runners during the spring.

"You would be surprised with what interest my neighbors and friends are following my trials. The Boysenberry far outclassed any of the berries I tried. I am sure they will replace many of the berries now grown. They seem to withstand our winters (it was 30 and 40 degrees below zero last winter for two weeks) better than dewberries."

"My plants winterkill some out on the ends," says Charles L. Halls of Hot Springs, S. D. He adds, "I put a light cover of straw over the plants after the ground had frozen. Ends sticking out were those that winterkilled. We had as low as 40 degrees below zero here last winter, so I believe Boysenberries will stand an ordinary winter."

Out of 14 plants set by Bert South, Hewitt, Minn., in the spring of 1936, he lost just two. He believes that by giving them proper care they will do fine in his locality.

Julius Popko of Mellen, Wis., was troubled with grasshoppers on his plants. He says, "Boysenberries seem to make a very good growth, about eight to 10 feet a season. Several of my test plants were frozen to the ground last winter, but this spring they all came through, which I think is pretty good in this section of the State with no protection whatsoever. Several of the plants blossomed, but the fruit did not mature, or perhaps was eaten off as we had a very bad year with grasshoppers. This coming fall I am going to give the plants protection for the winter and see the result before I set more plants."

Hardly had E. W. Hills of Shelbyville, Mich., set out his 600 Boysenberry plants in the spring of 1936 than along came a severe drought resulting in death for most of the plants. Mr. Hills believes, though, that with suitable irrigation he can produce good berries even in dry years.

Although his Boysenberries were winterkilled last year, George G. Curtis of Irma, Wis., set 100 more plants this spring. Mr. Curtis, like J. D. Winter, St. Paul, Minn., com-

(Continued on page 17)

STATE NEWS

REPRESENTATIVE SURVEY OF PLANTING PROGRAMS IN TYPICAL FRUIT REGIONS

ARKANSAS—Stimulation of "planting-back to-normal" the coming year is anticipated because of regular rainfall this year. Principally early varieties constitute plantings that have been made.—P. BROGDON, Springdale.

CALIFORNIA—Considerable replanting of oranges and lemons in areas where there was a loss of young trees due to the January, 1937 freeze will take place, in my opinion.—R. E. BLAIR, Agr'l Statistician, Sacramento.

INDIANA—There is a continuation of replantings in established orchards. Commercial plantings of peaches were made the past year, and the coming year will see additional plantings, especially in areas that lost heavily in the 1935-36 freeze. Apple plantings probably will occur in most select locations.—MERLE TROTH, Orleans.

IOWA—From now on and for at least a few years, there undoubtedly will be an increased planting program. We hope this will consist largely of hardy stock, such as Virginia Crab and Hibernal, so that severe winter injuries as occurred during 1935-36 can be averted

in future. Iowa State College Extension Service at Ames is recommending that these varieties be planted and then top-worked into the scaffold limbs.—R. S. HERRICK, Des Moines.

MARYLAND—Replanting activity in apple orchards the past year consisted of about 150 acres. Some growers are waiting to see what the new bud sports will do, also what the future trend of other varieties may be before planting. Existing acreage is receiving excellent care. The coming year will see trees of unsuitable varieties, old or weak trees, etc., removed.

Past year's revival in peach planting resulted in a total of over 500 acres being set, consisting of some of the newer varieties. Indications are that further planting will be made during the next year. There is keen interest in the more recent new varieties.—A. F. VIERHELLER, College Park.

MASSACHUSETTS—Fruit tree replacements are being made from year to year, thus orchards are being kept "intact."—WM. R. COLE, Amherst.

MICHIGAN—Heavy plantings of peaches, pears, and apples were made in the spring of 1937. Since no extensive plantings of sour cherries have been made since 1930, and good prices prevailed for the crop this season, heavy plantings of this fruit are anticipated the coming year.—H. D. HOOTMAN, East Lansing.

MINNESOTA—Planting activities during the past spring were concentrated on strawberries, with Premier and Beaver varieties leading in acreage planted. Increase in Latham red raspberry acreage is anticipated for next spring. Replantings of apples will be made to cover past two years' losses. Good prices for Red Lake currants this year will undoubtedly give additional impetus to planting of this variety if planting stock is available in sufficient quantity.—J. D. WINTER, St. Paul.

MISSOURI—Fairly extensive strawberry plantings were made the past year, a direct result of the excessive drought of 1936 which re-

moved a large per cent of the older plantings. Increase in acreage is anticipated the coming year. Brambles will be planted extensively in an effort to replace drought-killed plantations.

Replacements are being made of the large per cent of peach trees killed or injured during winter of 1935-36. Apple plantings have been and will continue to be light. Nut plantings will consist of desirable walnut varieties, and the better pecan varieties are being planted in extreme southeastern section.—W. R. MARTIN, Columbia.

MONTANA—Probably 80 per cent of the sweet cherry district frozen out in October, 1935, was replanted the past year. Balance will be replanted next spring. The 1936-37 plantings are making a good showing. Everbearing strawberry acreage in western section has been increased.—GEO. L. KNIGHT, Missoula.

NEW HAMPSHIRE—While most of the plantings being made are to offset the quantity of trees winter injured, some blocks of new plantings are also being set. Mostly McIntosh are being planted to take the place of the injured trees which were largely Baldwin.—C. O. RAWLINGS, Durham.

NEW YORK—Consistent demand for nursery trees indicates the steady planting that has been going on the last few years. Some of

this planting is to take the place of orchards lost from severe 1933-34 winter, particularly peaches and cherries.

In addition, there is a steady swing towards earlier varieties of peaches, including Valiant, South Haven, Golden Jubilee, and Halehaven. Increases in planting of the prune type plums, principally Italian Prune, have also occurred.

Among apple trees, McIntosh leads the procession, although Cortland has become one of the standards, and Northern Spy is staging a "comeback."—H. B. TUKEY, Geneva.

NORTH CAROLINA—Orchards are being replenished and small commercial apple and peach orchards ranging in size from 10 to 50 acres are being set.—H. R. NISWONGER, Raleigh.

NORTH DAKOTA—The State has only partially recovered from extreme 1936 drought and unusually severe winter of 1935-36, during which time a large percentage of fruit trees was killed. Planting this year may not be great but within the next year or two an extensive planting program is expected.—A. F. YEAGER, Fargo.

OHIO—Considerable replanting occurred in the spring of 1937 due to tremendous mortality of tree fruits experienced following the severe 1935-36 winter and extended drought of 1936. Additional planting is contemplated the coming year.

Extensive commercial acreage set out on the better peach sites would have been even greater had there not been a scarcity of nursery stock of desired varieties. While Elberta is still the favorite in the new plantings, unusual interest is being shown in the newer hardy, yellow, freestone varieties.

Interest in hardy understocks for later scaf-

fold working has caused many apple growers to set out blocks of Virginia Crab and Hibernal. In sections where Stayman has cracked badly, the Turley is coming to the fore. Cortland is gaining in favor, especially in northeastern Ohio. Increased use has been made of the red color sports.

Trend in new plum plantings is toward high quality varieties, like Stanley. Winter-injured sweet cherry plantings are being replenished.—F. H. BEACH, Sec'y, Columbus.

OREGON—Planting activity the past year was concentrated on heavy setting out of strawberries in the Willamette Valley region. Practically all available planting stock was used. Further plantings are contemplated for 1938. Acreage set this year to loganberries was limited only by nursery stock available. Some new plantings of Youngberries and Boysenberries were made. Raspberry planting occurred for replacement and occasional new fields. Filbert acreage was increased an estimated 800 to 1000 acres.—O. T. McWHORTER, Corvallis.

PENNSYLVANIA—From all indications heavy fruit tree plantings will be made during the next few years. This activity can be attributed to the number of trees being removed as a result of winter injury, more evidence of which is appearing as time goes on.

Primarily Stayman, Delicious, Jonathan, York, McIntosh, and Rome varieties of apples will be planted. Principal peach varieties will be Elberta, South Haven, Halehaven, and some of the newer varieties developed by the New Jersey station. Cherry plant-

ings will consist of Montmorency.—J. U. RUEF, State College.

SOUTH CAROLINA—During the past two or three years a big increase in peach plantings has occurred, particularly in the Piedmont and Spartanburg areas, last year being one of our heaviest planting years. Much interest is being shown in new plantings. Inquiries are received daily regarding selection of sites, soil types, etc.—A. E. SCHILLETTER, Clemson.

SOUTH DAKOTA—The dry years have taken a tremendous toll of fruit trees, many orchards being wiped out entirely. Some replanting occurred last spring in sections that had the most favorable moisture outlook. If moisture is ample next spring, there will be a good deal of planting.—W. A. SIMMONS, Sioux Falls.

TENNESSEE—Expansion of plantings to take care of normal decline is taking place in the large commercial peach areas. In the truck market areas near cities and towns growers are increasing their plantings, particularly of peaches.

Grower inquiries are displaying considerable interest in the newer varieties of apples and peaches. Nursery supplies of certain peach stock, notably Golden Jubilee June buds, are already depleted, according to O. E. Couch, inspector for the State Division of Insect and Plant Disease Control. —A. N. PRATT, Nashville.

TEXAS—Indications point to increased plantings in central West Texas cross timbered belt. Plantings will constitute commercial and semi-commercial orchards ranging in size from two to 25 acres. Some increase is expected in the planting of Vinifera grapes in the southwest (Winter Garden) area, and continued increases are expected for the next two or three years.—J. F. ROSBOROUGH, College Station.

UTAH—Considerable activity in orchard planting is anticipated in the vicinity of North Ogden and Brigham City in Weber and Box Elder counties on the upper bench lands now receiving water from the newly completed Pine View Irrigation Project.

Peaches and apricots are the principal fruits being planted. Elberta peach variety ranks first in popularity, then Early Elberta, J. H. Hale, Golden Jubilee, South Haven, Halehaven, and Rio Oso Gem. The Chinese or Jones (large Early Montgamet) is the principal apricot variety to be planted, although considerable acreage of Moorpark will also be set out. (The Moorpark grown here is the Routier Peach.) Some interest is being shown in Italian prunes and shipping plums, principally Formosa, Santa Rosa, and Satsuma.—F. M. COE, Logan.

VIRGINIA—There has been a total net gain in peach trees during the past year or two and prospects are that there will be a slight gain during the coming year. Ripening date of Virginia peaches seems to come at a very favorable period on the market. Principal commercial variety being planted is Elberta. Some growers are experimenting with Golden Jubilee, South Haven, and Halehaven.

Replacements of declining trees and filling out of acreage is being done by some commercial apple growers. Commercial orchards are receiving excellent care. Planting consists of red sports of such varieties as York, Stayman, Delicious, Rome, and Jonathan. Golden Delicious is being planted some as a pollinizer rather than Grimes due to difficulty of marketing the latter variety.—W. S. CAMPFIELD, Staunton.

WEST VIRGINIA—Nurseries were completely sold out of available apple stocks the past season, although they had allowed their stocks to dwindle. In general I would say that with the entire State's approximate 70,000 acres in apples, plantings the past season had ranged about four per cent. This does not include replacement plantings.—CARROLL R. MILLER, Martinsburg.

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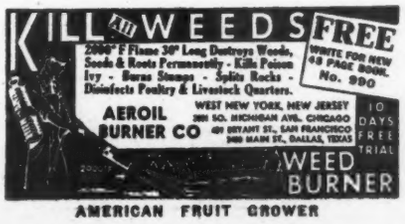
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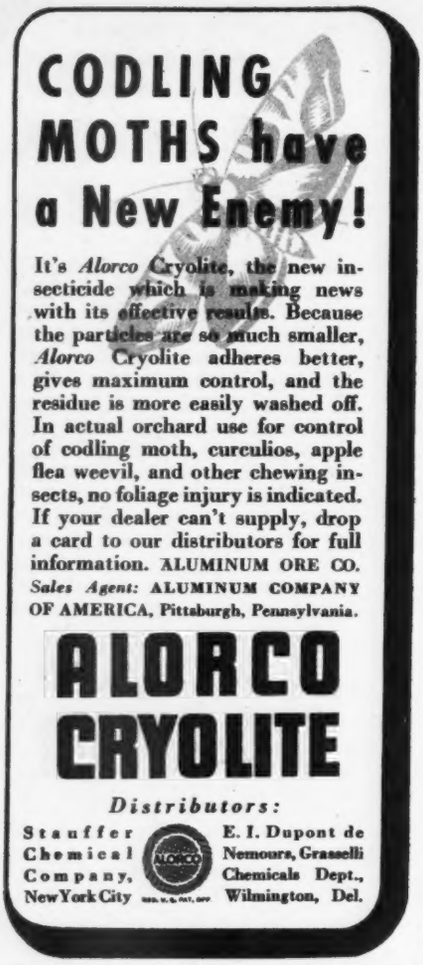

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ORCHARD PLANTING PLANS

(Continued from page 7)

consideration convenience of working conditions as influenced by the tops of the trees.

In the square system, permanent trees can be planted in from 35 to 45-foot squares. If fillers are to be used midway between the permanent trees in filler rows between the permanent rows, then the permanent trees should never be set closer than in 40-foot squares. The following measurements were taken in orchards planted 40x20 feet or which had been given just good care and represent averages from a great many measurements.

DIAMETER OF HEADS OF 12-YEAR-OLD APPLE TREES

Variety	*Diameter*
Wealthy	16.7 feet
Jonathan	18.3 feet
Grimes	18.5 feet
Stayman	20.8 feet
McIntosh	21.1 feet
Baldwin	21.5 feet

It will be seen that the heads of the trees of most varieties were practically filling the 20-foot square between the trees in the row by the end of the twelfth year. It is obvious, then, that unless the filler trees could pay for themselves in 12 or 14 years, they would not be justified if the planting distance of the permanent trees was 40x40 or less.

It will generally be necessary to prune the fillers back fan shape on the portion of the trees next to the permanent trees. If the filler trees planted in the permanent rows in the square system are removed when they should be, say at 15 years, then there is bound to be a decline in the production per acre which will not be overcome for several years after the fillers are removed. This is a factor which should be kept in mind.

Passing from the square method to the quincunx system, which is essentially the square or rectangular arrangement with a tree in the center, it is easy to see that a filler thus planted could stand several years longer than fillers set in the permanent rows. For instance, where the permanents were set in 40-foot squares, the filler in this plan would be approximately 28 feet from the permanents as against 28 when fillers are planted in the rows.

However, the fact that such fillers can stand longer than in the case of the former plan constitutes one of the weaknesses in the quincunx system. The temptation is to leave them just one more year. This system makes it necessary to perform such operations as mowing, spraying and cultivation on the diagonal and is after all nearly always a filler system which sooner or later requires intestinal fortitude on the part of the grower when it comes to removing the fillers.

Before leaving the square and quincunx, we wish to emphasize that higher acreage production will be likely for 15 to 18 years than when the hexagonal or triangular system is employed on the same area.

The hexagonal system or the triangle system consists of an arrangement where all the trees are equally distant from each other. When the area is wide enough to consist of three or more rows, the hexagon is formed by placing one tree in the center with six more spaced equally distant in all directions around it, or making six equilateral triangles. It sounds geometrical, but is actually quite simple after the planting distance is decided.

The following comparisons will illustrate the difference in trees per acre when the square and hexagonal systems are used.

(Continued on page 18)

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CHIMERAS

(Continued from page 9)

the varieties of apples, including Baldwin, Ben Davis, Duchess, Grimes Golden, Jonathan, Maiden Blush, McIntosh, Northern Spy, Rome Beauty, Roxberry Russet, Steel Red, Yellow Transparent, Wealthy, and Winter Banana, besides Bartlett and other varieties of pears. Size variations in any variety may be either smaller or larger than normal.

Correlated with the giant or large sized fruit factor are distinct growth characteristics of the tree. The trees are low spreading and branched at wide angles. Everything about the tree is large. The twigs and both fruit and vegetative buds are large, and the foliage is over-sized and thick. Giant trees of Duchess, Grimes Golden, McIntosh, Northern Spy, and Wealthy are remarkably similar and progeny tests have reproduced fruit and tree characters.

Size chimeras affect horticulture in various ways: (1) The presence of traces of either the giant or small factors mixed in propagating buds causes imperfectly shaped cull apples to grow among perfect ones in transitional trees. (2) Bad mixtures of the two factors cause limbs and trees to produce nothing but worthless fruit. (3) Segregation to the small sized variation causes the tree to produce fruit that is too small for commercial grades. (4) Selection by nurserymen of large size sports may result in stable strains of larger fruit.

The three apples illustrated on page nine were taken from a tree from which a new variety is to be propagated. It has characteristics of McIntosh, Northern Spy, and Delicious. It is transitional. It produces sectorial color chimeras, mixtures of three types, red, red striped, and striped. In propagation we will select for the red and red striped colors and eliminate insofar as possible the striped.

Bud selection accomplishes three things which are vital to modern horticulture: (1) prevention of deterioration; (2) improvement of commercial varieties; (3) final stability.

THE BOYSENBERRY

(Continued from page 13)

plains of the thorniness of the Boysenberry plants, saying that they are not easy to handle.

Dr. D. B. Thomson near Detroit, Mich., believes that the Boysenberry would be a good market fruit if he had refrigeration facilities available.

Several Wisconsin growers, including Allen Troemmer, M. C. Borman, F. D. Randall, Norman Koelsch and August Ball, report that Boysenberry plants will apparently do well if covered for winter protection. Most of these growers state that they will continue to grow this fruit on a trial basis before expanding their plantings.

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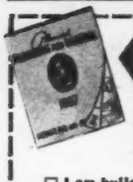

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PLANTING PLANS

(Continued from page 16)

TREES PER ACRE

Distance between trees	*Square System*	*Hexagonal System*
25	70	79
30	48	56
35	35	41
38	30	35
40	27	31

In laying out an orchard on the hexagonal system, a base line is established along one side of the field and stakes are driven at the selected distance, say 38 feet apart. Then another line is established for the next row 32 feet and 11 inches from the first row and stakes set in this row at intervals of 38 feet, only in row two the tree locations are midway between the tree locations in row one. Row three is established 32 feet and 11 inches from row two and the trees in this row are set 38 feet apart and in exact line with the trees in row one. Of course, row four is a duplicate of two, etc.

In this sort of a system there is the most economical use of space both below and above surface. If the permanent trees are much closer than 38 feet, the grower can be prepared to work his orchard on the diagonal by the time it is 25 years old.

We have attempted to set forth the advantages as well as disadvantages of the three plans. If one is thinking in terms of production for the first 12 to 18 years, then the square system with fillers between the permanent trees, which in no case should be closer than 40 feet, is perhaps the best. This still gives an opportunity to cultivate the orchard for several years and perhaps improve the soil fertility.

If the period is lengthened to 20 or even 22 years, then the quincunx system at, say, 40 to 42 feet for the permanents, may be suggested. Finally, if the long range view is taken and production for 35 years or more is the basis for planting arrangement, then the hexagonal system has much to recommend it. A 25-foot hexagon places the rows 22 feet one inch apart; a 30-foot hexagon will space the rows at 26 feet; a 35-foot hexagon will have the rows 30 feet four inches apart; and a 40-foot hexagon will space the tree rows 34 feet seven inches apart.

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PEACHES • *(Continued from page 10)*

for the past quarter of a century as the No. 1 peach in the fruit growing areas east of the Rocky Mountains. A number of new varieties have been introduced during the past 10 to 15 years that have been tested in small plantings. Some of these show commercial promise for peach growing areas with special requirements as to bud hardiness, shipping qualities, and climatic adaptation.

The following are some of the important varieties that have been sufficiently tested to show value as commercial varieties ripening ahead of Elberta:

Golden Jubilee—This high-quality yellow-fleshed freestone, introduced some years ago by the New Jersey station, ripens about 24 days ahead of Elberta. It has been tested commercially in the northeastern states, where it seems to have given best results.

Fairs Beauty—Originated in Texas as a chance seedling. A yellow-fleshed semifree variety, ripening just after Golden Jubilee. Commercial plantings have been made in Texas and Arkansas. When tree ripe it is a beautiful red color and the flesh parts readily from the stone.

Halehaven—A yellow freestone of good size and quality, round in shape, attaining good red color. Introduced by Michigan station and is the result of a cross between J. H. Hale and South Haven. It has many of the desirable characteristics of these two varieties, and under present commercial tests it bids fair to replace the South Haven because of its firmness and better color. Ripens about two weeks ahead of Elberta.

July Elberta—A yellow freestone of good red color, with firm flesh, medium large to large, and round in shape. Ripens in season with Halehaven or slightly later.

Vedette—This variety, introduced some years ago by the Horticultural Experiment Station at Vineland, Ontario, Canada, has been under test in this country for a number of years. Round in shape, medium to large, yellow freestone with red blush to striped red. Ground color is distinctly yellow. Of high quality. Ripens a few days ahead of Halehaven.

Valiant—Also introduced by the Horticultural Experiment Station at Vineland, Ontario, Canada. An Elberta seedling a few days to a week after Vedette.

Fisher—A yellow freestone, discovered in Canada. Reported to be a bud sport of the Valiant ripening about three weeks ahead of that variety, it has just recently received favorable comment. It has not been widely tested, but because of its earliness will be watched with interest.

Maxine—A yellow fleshed freestone introduced by the U.S.D.A., ripening about three weeks ahead of Elberta. Of large size, yellow skin with red blush, lemon yellow flesh, firm, with small pit, and of good quality. It has been tested principally in California.

Redelberta—Reported to be a bud sport of the Elberta, ripening in the Northwest 10 days to two weeks earlier than Elberta. This is one of the more recent introductions and has not been sufficiently tested to determine its commercial possibilities.

* * *

Varieties ripening after Elberta are of interest in those sections where it is desirable to extend the season with later ripening varieties. Among the older commercial varieties of this season are Brackett, Wilma, Salberta, Augbert, and Iron Mountain. The newer varieties that have been introduced follow closely after the period of ripening for Elberta. Among these may be mentioned the following:

White Hale—A white-fleshed variety of Hale parentage introduced by the New Jersey station. Fruit of good size, firm flesh, round, and well colored, ripening with or just after Elberta.

Fay Elberta—An Elberta type large-sized yellow freestone; good red color, and good dessert quality, ripening a few days after Elberta.

Fertile Hale—A variety of Elberta type and shape, ripening just after Elberta, of good size and color.

Rio Oso Gem—This variety, originating in California, is a large-sized yellow-fleshed freestone, productive, ripening about a week after Elberta.

Hardee—This yellow-fleshed freestone variety, originating in Ohio, is reported to be hardy in bud and ripens a little later than Elberta. Little is known as yet of its commercial possibilities.

Candoka—This variety of J. H. Hale type and season has been tested commercially in the Northwest. It is a yellow freestone of high color, very attractive in appearance, with nearly fuzzless skin. It is pollen sterile, like J. H. Hale, but on young trees it has not attained as large size, nor has it been as productive as that variety.

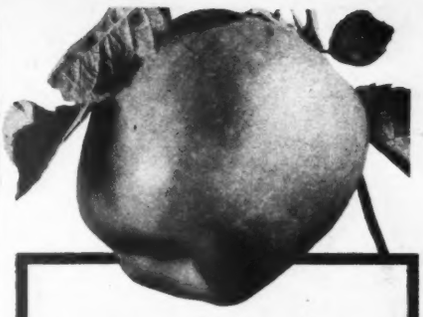
BUD SPORTS

(Continued from page 11)

the first bud sport, also, to win the coveted Wilder Medal, presented to outstanding fruits by the American Pomological Society. Starking originated as a limb sport in a New Jersey orchard.

Into the minds of many fruit growers will come the question, "Do you suppose I could ever find a new and outstanding fruit?"

The answer is, briefly, that sports just happen. A keen observer may detect marked differences in fruit. That's how bud sports are discovered.



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Nov. 16-19—Iowa State Horticultural Society annual convention and annual meetings of affiliated societies, Iowa State College, Ames.—R. S. Herrick, Sec'y, State House, Des Moines.

Nov. 17-19—South Dakota State Horticultural Society annual meeting, Clark.—W. A. Simmons, Sec'y, Court House, Sioux Falls.

Nov. 18-19—Tennessee State Horticultural Society annual meeting, Jackson. Headquarters, New Southern Hotel; meetings in City Hall Auditorium.—G. M. Bentley, Sec'y, Knoxville.

Dec. 1-3—New Jersey State Horticultural Society annual meeting, Haddon Hall, Atlantic City.—Arthur J. Farley, Sec'y, New Brunswick.

Dec. 2-3—Oregon State Horticultural Society annual meeting, Medford.—O. T. McWhorter, Sec'y, Corvallis.

Dec. 3-4—Montana Horticultural Society annual meeting, Missoula. Geo. L. Knight, Sec'y, Missoula.

Dec. 7-9—Virginia State Horticultural Society 42nd annual meeting, Charlottesville. Headquarters, Monticello Hotel; meetings in new Armory Bldg.—W. S. Campfield, Sec'y, Staunton.

Dec. 8-10—American Pomological Society annual convention in joint session with Missouri State Horticultural Society, Springfield, Mo. Program and exhibits in Shrine Mosque. Headquarters for APS, Hotel Kentwood Arms.—H. L. Lantz, Sec'y, APS, Ames, Iowa. W. R. Martin, Sec'y, Mo. Society, Columbia.

Dec. 8-10—Kansas State Horticultural Society annual business meeting morning of the 8th, Pittsburg, adjourning to meet with American Pomological and Missouri State Horticultural societies, Springfield, Mo.—Geo. W. Kinkead, Sec'y, Topeka.

NUT NOTES

AT the 1936 convention of the Northern Nut Growers' Association, Miss Mildred Jones, Lancaster, Pa., reported big differences in the germination of different lots of black walnut seeds. About 30 per cent of the seeds of the Ohio black walnut germinated, while only eight per cent of Thomas seeds germinated. The seeds of two large seedling trees germinated about 95 per cent. Some of the Ohio seedlings were apparently hybrids between that variety and an English walnut and were more vigorous than the pure Ohio seedlings. Thomas seedlings were reported by several nut growers to make larger and better stocks than other black walnut seedlings.

Dr. O. F. Curtis of Cornell University reported that there was serious danger of grafts becoming overheated in direct sunlight if a dark colored wax was used. He stated that, "Various methods of shading will reduce this danger of overheating and merely the use of waxes made to reflect the light by addition of such materials as aluminum powder may be found effective and perhaps fully adequate in reducing the heating danger."

H. F. Stoke, Roanoke, Va., reported that latex to which aluminum powder had been added made a satisfactory grafting compound. The material is applied easily with a brush or swab without heating and solidifies into a pure rubber coating within a few minutes. The material is nontoxic, excludes and reflects light, and is economical.

C. A. Reed of the U.S.D.A. in a very interesting and readable account of natural walnut hybrids in the East described many well known and other lesser known walnut hybrids. None of these has been of horticultural value, but many have been noble trees. Mr. Reed's paper indicates that a rather large number of different crosses in the walnut group may be made. Natural and artificial crosses between the Persian (English) walnut and the black walnut, the Persian and the butternut, the Japanese and the Persian, the Japanese and the butternut, and the black and the Persian are described. That none of these are of value is probably due to the fact that the parents were chance trees. The possibilities of crossing the various species of walnuts using selected varieties as parents remain to be determined.

The filbert plantings on the grounds of the New York State Agricultural Experiment Station at Geneva are in bearing this year. Over 100 varieties and 600 or more seedlings from various crosses between the Rush variety of the American hazel and varieties of *Corylus avellana*, the European filbert, are fruiting. Many of the seedlings are heavily laden with nice large nuts. These trees may be seen by visitors to the experiment station during late September and early October and later samples of the nuts will be on display for a short time at the station.—GEORGE L. SLATE, *Sec'y*, Northern Nut Growers' Assn., Geneva, N.Y.

PRESERVING CIDER

FRUIT growers often desire to preserve cider but their production is not enough to warrant installing preserving equipment. To these growers there is now available benzoate of soda.

Benzoate of soda is used at the rate of six and one-half ounces to 50 gallons of cider and though a slight taste may be transmitted to the cider by this chemical, its natural flavor is retained. Cider treated in this manner should be stored in a cool room while being held.

Some states require that when cider is treated with benzoate of soda, a statement to this effect must appear on the label.

NEW

- TRACTOR CHAINS
- PIPE VISE
- WAX EMULSION

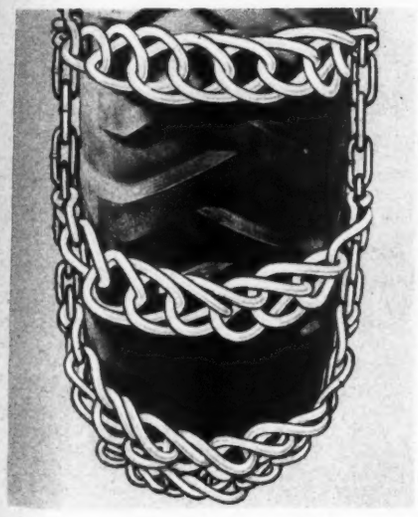
By HANDY ANDY

General clean-up work and moving of fruit from orchard to storage, and from storage to market will probably keep every fruit grower busy during the next month or so. Equipment must be in shape to handle fruit under all conditions and later on you will want to make repairs about the orchard. From this work I am sure you will obtain some new ideas, so please send them to me in care of AMERICAN FRUIT GROWER, 1370 Ontario Street, Cleveland, Ohio.

TRACTOR CHAINS •

Probably nothing is so nerve-racking as to have fruit ready to move out of the orchard, or to be engaged in clean-up work during the fall and have one of those cold fall rains change the orchard soil into greasy muck. It's at such a time that we appreciate new equipment which will allow us to operate under muddy conditions.

A new tire chain for tractors has just made its appearance on the market. This chain has large links in the cross-chain that ride high over the deep grooves in the new type tractor tires. The particular arrangement of the cross-chains permits loosening of mud and dirt with each rotation of the wheel.



Manufacturers state this new chain is constructed of special case-hardened alloy steel and the links are electrically welded. We know that traction is essential for good tractor operation and the larger links of this new chain appear to have the power of developing the needed traction. They are easily put on the tire by a foolproof fastener that does not clog or jam. The illustration above shows this chain in place on a tractor tire.

PIPE VISE •

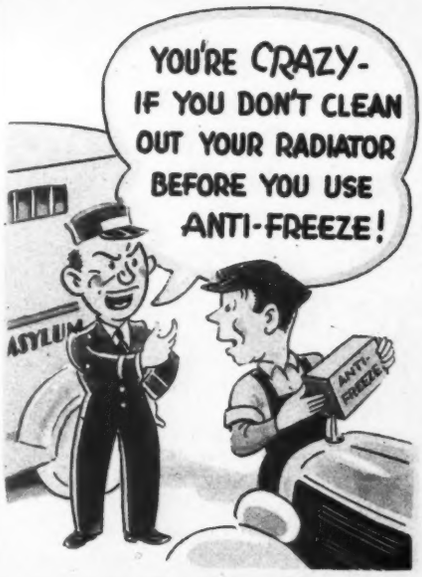
When bad weather comes around this fall and winter, there will probably be time to catch up on odd jobs in the workshop. I know that many growers, especially those having stationary spray or irrigation systems, have a good bit of work to do on pipes. The new chain pipe vise shown here will be of interest to these growers.

The elongated and knurled adjustment nut on this vise provides a gripping surface for fingers which allows taking up the slack in the chain more rapidly. Interference between handle and bench is avoided. Just a slight turn of the handle is enough to tighten and clamp the pipe for threading, fitting, or other work.

WAX EMULSION •

An emulsified wax containing bentonite and other materials is now available to fruit growers. Its particular application to the fruit field is for coating young, newly-set trees to prevent their drying out.

At Michigan State College, out of 173 young cherry trees set in a block, 81 were sprayed with the new wax emulsion, known as "Dowax" while 92 were left unsprayed. Of the 81 trees sprayed, survival was 87.6 per cent, with an average total terminal growth of 64 inches. Of the 92 unsprayed trees, 69.5 survived and their average total terminal growth was 41.6 inches.



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Just pour some Sani-Flush in the radiator. (Follow directions on the can.) Run the motor. Drain, flush and fill up with anti-freeze. Then you're set for a winter of safety. You won't lose anti-freeze. Poor circulation won't spoil the efficiency of your motor. Sani-Flush can't hurt aluminum cylinder heads or motor parts. You'll find it in most bathrooms for cleaning toilets. Sold by grocery, drug, hardware, and five-and-ten-cent stores—25 and 10 cent sizes. The Hygienic Products Company, Canton, Ohio.

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SUCCESSFUL ORCHARDS

● A "ROUND TABLE" PAGE FOR EVERY GROWER ●

This page is a place for growers to get together and exchange experiences and ideas. The beginner, as well as the veteran, will find here many practical suggestions for better and more profitable fruit growing. In return for the helps you receive from this page, be ready to pass on, for the benefit of others, any new idea, method or procedure you have developed or run across. Just jot it down as it occurs to you (a postcard will often do) and mail it to the "ROUND TABLE EDITOR," AMERICAN FRUIT GROWER. Don't worry about fancy writing. What the readers of this page want are practical pointers—that are to the point.

ORCHARD INTER-CROP PROVES PROFITABLE

MUCH has been said pro and con regarding the use of inter-crops in orchards. The following from E. R. Gorton of Missouri should create a great deal of interest about the "Round Table."

"We inter-crop blackberries and raspberries in our young orchard until the orchard is large enough to begin bearing. In 1936 we had blackberries in one orchard that returned $1600 per acre.

"Our berries are sprayed four or five times a year. We succeed in getting a crop every year because we irrigate the berries regardless of rainfall. We have a windmill situated on a side hill just above the orchard. It is a deep well with plenty of water, so that it is no problem to irrigate the fruit.

"When others in the community are without fruit, we invariably have a crop. The small fruit does not 'burn out' because the moisture so much needed in berry growing is supplied the canes in quantity.

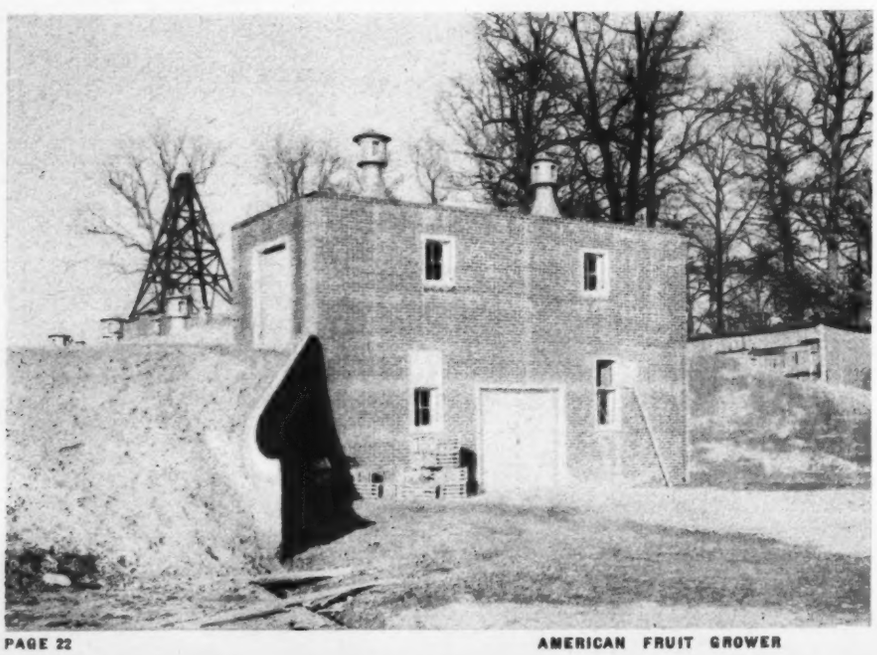
"Success in berry growing depends upon the care and attention given the berries. In berry raising you have to know what you are about and do the work at the right time. In our case, we have greatly simplified matters by the manner in which we set out the bushes and care for them from year to year.

"The canes are set in rows seven feet apart so that they can be cultivated the same as corn. This cultivation is continued through the growing season and until fall. Since the canes are planted in rows they are easily handled and pruned. Mid-season pruning is done quickly by going down the rows with a hand sickle and topping the young canes to the desired height. This causes them to send out lateral branches and greatly increases the yield of fruit the following season.

"Pruning is done in both the fall and spring. In the fall we remove all the dead canes but do not touch the young canes, which are left until spring. We have found that green canes pruned in the fall very often winterkill because the open ends caused by the pruning permit the frost to enter the cane and work down to the roots. We eliminate this risk by pruning in the spring when the canes are still dormant but after all danger of killing frost is past."

Mr. Gorton has some more practical pointers on berries as inter-crops in the orchard but we will save them for next month's discussion. In the meantime, if you've had any experiences with orchard inter-crops, send along some notes on them.

The type of common storage discussed at right by G. E. Smith.



CLAIMS SOAP WILL PREVENT ANIMAL INJURY

STATING that "rabbits and deer don't like soap," J. C. Bodewig of Illinois, goes on to tell about his method of protecting trees from rabbits and deer:

"To keep rabbits and deer from eating trees, I soak two bars of laundry soap in water. When the soap is soft, I take one bar in each hand and rub it up and down the trunks and lower limbs of my trees.

"This has worked fine so far and I believe it will do the trick in all cases. It may be necessary to rub soap on several times during the winter according to weather conditions."

Soap is a useful item for the fruit grower in his battle against pests but this is the first time we have heard of its use against larger animals.

GROUND TEMPERATURES AFFECT STORED APPLES

MANAGEMENT of common storages holds the attention of many growers at this time and an account of the experiences of G. E. Smith, Pennsylvania grower, gives us his method of storage management.

"To begin a temperature study for common storage, plunge a thermometer into a spring in January and you will record a temperature of possibly 48 degrees. Take the temperature of this same spring in July and it will be 52 degrees. The water has a constant temperature of about 50 degrees and is only slightly affected by the cold of winter and the heat of summer. The temperature of the earth is 50 degrees. In the storage with earth against three walls and an earthen or cement floor, the ground temperature of 50 degrees is almost constant.

"In early October some of our apples were picked at 75 degrees into five-eighths bushel baskets, and were left outside to cool overnight. In the morning they were placed in high stacks, completely filling the cellar, and registered a temperature below 60 degrees. Some mornings they were 45 degrees, but they never warmed up to 70 degrees. If the apples were placed in a large pile in the open at 75 degrees, weeks would be required to cool the pile.

"A common error is to open storage doors and windows for air during the day. We throw open the doors and windows at night when the temperature is 55 degrees or below. October nights are often 40 degrees, and an outside temperature of 35 to 40 degrees will cool the storage considerably. Stayman and Fallawater keep well for Christmas. In our locality, Rome, Delicious, Banana, and York should be out by December 1."

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Note how the blades of this heavy duty, offset cover crop disk are biting down through the trash and sod. Here is assurance of destroying runways and nests of rodents—so that they don't damage tree roots during the winter.

And see how thoroughly this outfit is chopping in the surface trash—dry, matted vegetation can be a serious winter fire hazard to the orchard.

It takes plenty of heavy-duty power to do such work. Every size of the "Caterpillar" track-type Tractor offers you this power. All-weather, 365-days-a-year pulling power made certain by non-slip, all-weather traction of broad tracks—and a heavy-duty, full pressure-lubricated *track-type tractor engine* that doesn't know how to give up!

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